

## CHAPTER 1

### INTRODUCTION

1-1. Purpose and scope. This manual prescribes the standards to be used for airfield flexible pavement design for mobilization construction at Army installations.

1-2. Traffic classes. Airfield pavement areas have been categorized according to the weight of the using aircraft and the distribution of the traffic. Criteria for airfield pavement classes are presented in table 1-1.

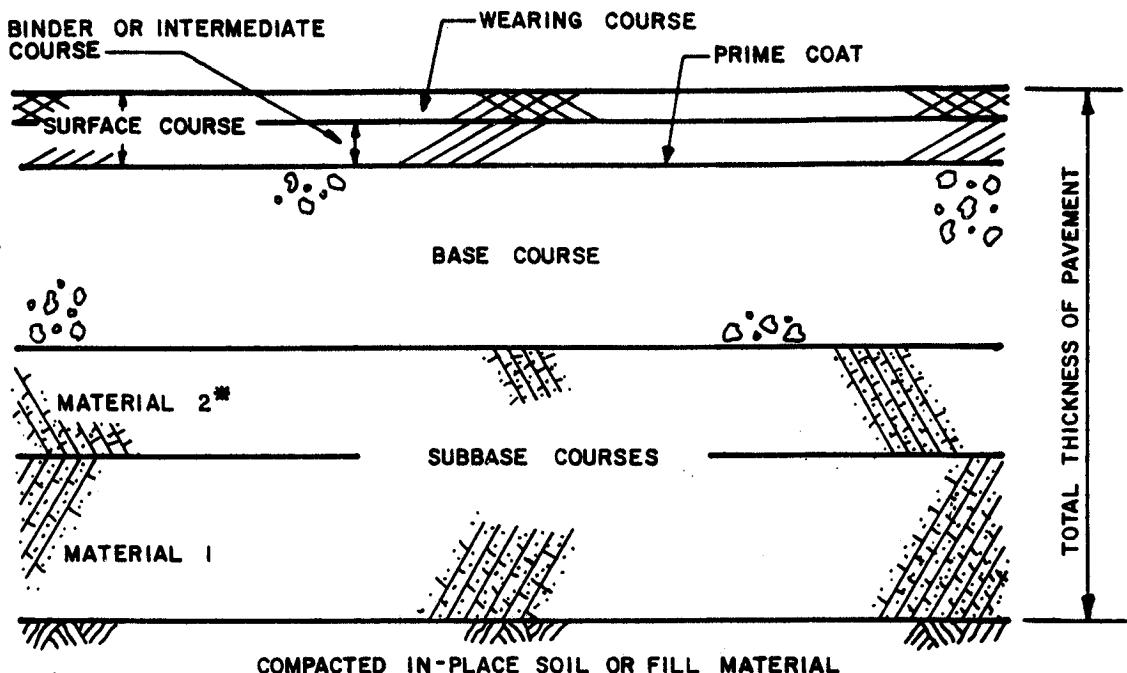
1-3. Definition. Flexible pavements are so designated due to their flexibility under load and their ability to withstand small degrees of settlement without serious detriment. The design of a flexible pavement structure is based on the requirement to limit the deflections under load and to reduce the stresses transmitted to the natural subsoil. The principal components of the pavement include a bituminous concrete surface, a high-quality base course or stabilized material, and a subbase course. Figure 1-1 defines the components and the terminology used in flexible pavements. Examples of flexible pavements utilizing stabilized layers are shown in figures 1-2 and 1-3.

1-4. Use of flexible pavements. The use of flexible pavements on airfields must be limited to those areas not subjected to detrimental effects of jet fuel spillage and jet blast. Asphalt surfaced pavements have little resistance to jet fuel spillage and jet blast, and their use is limited in areas where these effects are severe. Flexible pavements are generally satisfactory for runway interiors, taxiways, shoulders, and overruns. Special types of flexible pavement (that is, tar rubber) or rigid pavement should be specified in critical operational areas.

Table 1-1. Pavement Loading Classifications\*

<u>Class</u>	<u>Planned Aircraft Traffic</u>	<u>Design Basis</u>
I	Rotary- and fixed-wing aircraft with maximum gross weights equal to or less than 20,000 pounds.	Class I pavement will accommodate all Army fixed-wing and rotary wing aircraft except the CH-47B/C, CH 54A/B and the proposed Heavy Lift Helicopter. This pavement design will be used for all airfield facilities other than where Class II, III, or IV pavement design is required. The design is based on 25,000 passes of the most critical aircraft in this class.
II	Rotary-wing aircraft with maximum gross weights between 20,001 and 50,000 pounds.	Class II pavement design will be used for facilities designated to accommodate the CH-47B/C and CH-54A/B aircraft. The design is based on 25,000 passes of the most critical aircraft in this class. (Note: Accommodation of Heavy Lift Helicopters dependent on further aircraft development).
III	Fixed-wing aircraft with maximum gross weights between 20,001 and 175,000 pounds and having one of the indicated gear configurations.	Class III pavement design is suitable for a large number of fixed-wing aircraft currently in the Air Force inventory. The design is based on 5,000 passes of the most critical aircraft in this class. Design criteria relates only to aircraft having one of the following gear configurations:
		Single wheel, tricycle, 100 psi tire pressure.
		Twin wheel, tricycle, 28-inch c. to c. spacing, 226 square inches contact area each tire.
		Single tandem, tricycle, 60-inch c. to c. spacing, 400 square inches contact area each tire.
IV	Multiple wheel fixed-wing and rotary-wing aircraft other than those considered for Class III pavement.	Class IV pavement will be of special design based on gear configuration and gear loads of the most critical aircraft planned to use the facility. Class IV pavement design will also be used for facilities normally being designed as Class III pavements when over 5,000 passes of the most critical aircraft in that category are anticipated during the expected life of the pavement. Designs for special gear configurations shall be based on design curves provided in Air Force Manuals. Curves for Air Force Light, Medium, Heavy load and short field are included for reference. See table 7-1.

\* Type B traffic areas include all runways, primary taxiways, warmup aprons, and traffic lanes across parking aprons. Type C traffic areas include shoulders, overruns, secondary (laidber) taxiways, parking aprons except for traffic lanes, and other paved areas used by aircraft not included in Type B traffic areas. Type A and D traffic areas will not be considered for Class I, II, and III pavement loadings under mobilization design criteria.

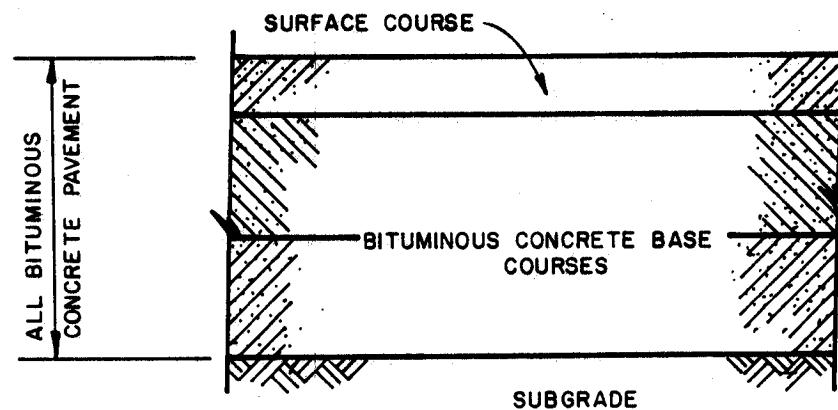


\* MATERIAL 2 IS OF A HIGHER QUALITY THAN MATERIAL 1.

<b>PAVEMENT</b>	Combination of subbase, base, and surface constructed on subgrade.
<b>SURFACE COURSE</b>	A hot mixed bituminous concrete designed as a structural member with weather and abrasion resisting properties. May consist of wearing and intermediate courses.
<b>PRIME COAT</b>	Application of a low viscosity liquid bitumen to the surface of the base course. The prime penetrates into the base and helps bind it to the overlying bituminous course.
<b>SEAL COAT</b>	A thin bituminous surface treatment containing aggregate used to waterproof and improve the texture of the surface course.
<b>COMPACTED SUBGRADE</b>	Upper part of the subgrade which is compacted to a density greater than the soil below.
<b>TACK COAT</b>	A light application of liquid or emulsified bitumen on an existing paved surface to provide a bond with the superimposed bituminous course.
<b>SUBGRADE</b>	Natural in-place soil, or fill material.

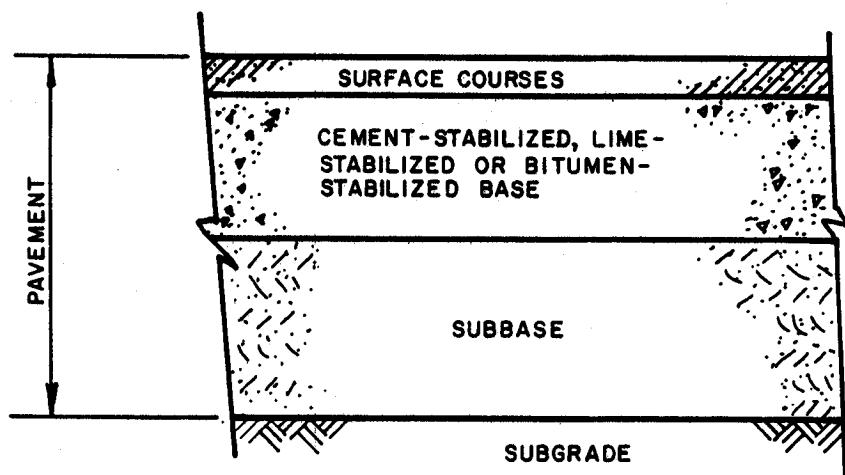
U. S. Army Corps of Engineers

FIGURE 1-1. TYPICAL FLEXIBLE PAVEMENT AND TERMINOLOGY



U. S. Army Corps of Engineers

FIGURE 1-2. TYPICAL ALL BITUMINOUS CONCRETE PAVEMENT



U. S. Army Corps of Engineers

FIGURE 1-3. TYPICAL STABILIZED BASE SECTION